

Peter Hopwood

Qualifications

B E (Hons 1), Ph D, both degrees in Mechanical Engineering, from the University of Western Australia

Affiliations

Fellow of the Institution of Engineers, Australia, Chartered Professional Engineer (retired)

Fellow of the Australian Institute of Company Directors (retired)

Fields of Special Competence

Peter has 40 years' post graduate experience in power, oil & gas, minerals processing, research and development, infrastructure (water), and consulting, as a design engineer, project manager, general manager and company director, in the UK, the USA, Indonesia and Australia.

EXPERIENCE

2013 – 2016: PDC Group

Non-executive Director

PDC was a design detailing and engineering consultancy developing specialised software for detailing in 3D, as well as participating in many major infrastructure and resources projects in WA, the Philippines and the USA. Peter provided engineering experience and advice at board level and was also Chairman of the Board's Remuneration Committee.

2006-2013: Sinclair Knight Merz

Principal

Peter was a senior member of SKM's global Mining & Metals business unit.

2010 – 2013 Project Director; BHP Billiton Client Manager; Fluor-SKM JV Steering Committee member

Peter led the SKM team which completed a pre-feasibility study for FerrAus Ltd of their planned iron ore project in the eastern Pilbara region of Western Australia.

Led teams undertaking other feasibility studies for iron ore projects in the Pilbara, including a mine and beneficiation plant, with rail loadout, and a port, including rail unloading, stockpiling and ship-loading. Reviewed study reports on other projects as an internal independent peer reviewer.

2007 – 2010 Manager Operations, Mining & Metals – Western Region; Fluor-SKM JV Steering Committee member

In this role Peter was responsible for all Mining & Metals activities in Western Australia, South Australia, and the Northern Territory. Additionally, Peter was responsible for SKM's operations in Shanghai, China. SKM had major engineering and project management roles with BHP Billiton and Rio Tinto, and was developing an expanded portfolio of clients in iron ore, uranium and base metals; Peter was responsible for these operational and business development activities.

SKM joint ventured with Fluor to deliver all of BHP Billiton's iron ore projects in the Pilbara. Peter represented SKM as one of its two members on the JV Steering Committee (effectively a Board).

1993 to 2006: HBH Consultants

Principal

Formed HBH Consultants in January 1993, to provide engineering and project management services in the resource and oil & gas sectors of industry. Was responsible for day-to-day management of HBH Consultants as well as performing tasks for clients. He often acted as HBH's sponsor, with direct high-level client relationships. His personal briefs included:

- Confidential Client - Pre-feasibility study of proposed renewable energy technology manufacturing facility for WA
- Confidential client - Independent expert on project management, in a dispute resolution.
- Confidential Client - Review and recommendation on possible investment in advanced coal treatment technology
- Confidential Client - opinion for Prospectus related to renewable energy
- Lynas Corporation Ltd - study leader for confidential project
- Newcrest Mining Ltd - Implementation plan preparation for part of Telfer project
- Western Mining Corporation - Project management and quality systems advice and services
- WMC Resources Ltd - Feasibility Study Manager for Expansion of St Ives Gold Mines
- WMC Resources Ltd - Post-completion review of \$1bn project, reporting to WMC's Executive Director, Finance
- Confidential client – Pre-feasibility and definitive feasibility study team leader for a proposed garnet project

1994 to 2003: Perth International Centre for Application of Solar Energy

Non-executive Chairman

CASE was a joint initiative of UNIDO, the Australian and Western Australian Governments, promoting the use of renewable energy in developing countries.

In this role Peter chaired a board of eight directors, reporting to the Minister of Energy within the Western Australian Government. Tasks included international representation, strategic planning, and public speaking about renewable energy.

1995 to 2003: Water Authority (1995); Water Corporation (1996 – 2003)

Non-executive Director

In this role Peter contributed to the Corporation's planning and execution of its very significant capital works programme, as well as its strategic direction in the face of declining rainfall and increasing demand. Peter strongly advocated the Corporation's adoption of desalination technology to supplement Perth's declining available water supplies, and also the strengthening of many of the Corporation's older dams, to meet current standards.

- Member of Innovation Action Committee of the Board (1996 – 99)
- Chairman of R & D Committee of Board (2000 - 2003)
- Chairman of Compliance Committee of Board (1996-98)
- Member of Investment Committee of Board (1999 - 2001)
- Member of Appropriations Committee of Board (2001 – 2003)

2004 to 2007: Gascoyne Water Asset Management Cooperative Ltd

Non-executive Director

GWAMCO is a mutual cooperative owned by the growers of the Gascoyne Irrigation Area, which surrounds Carnarvon in Western Australia. GWAMCO owns a system which supplies non-potable water to about 1000ha of irrigated farmland via buried pipelines on both sides of the Gascoyne River. In this role Peter assisted in the formative stages of establishing GWAMCO, and in determining the future

directions of the irrigation system in terms of expansion and replacement with a system better suited to modern methods of crop irrigation.

1990 to 1992: CMPS&F Group (WA & Jakarta)

WA Division Manager (1990-91); Manager International (1992)

Responsible for general management, commercial negotiations, and marketing and personnel management (up to 150 permanent and contractor engineers, draftsmen and other professional people)

- Undertook major project sponsor role (synthetic rutile plant for AMC Mineral Sands). Active role in integrating CMPS and Scott & Furphy in WA, upon national merger of firms. Conducted feasibility analyses for several clients, and prepared report for prospectus. Interaction with banks lending to projects, as adviser.
- Based in Jakarta, restructured and managed total offshore operations of CMPS&F in countries such as Thailand, Brunei, Singapore, Malaysia, China, Nepal and Pakistan, with annual fee turnover of about \$10m.
- Responsible for management of CMPS&F operation in Indonesia. Overview of all Indonesian projects, including 280km natural gas pipeline design/survey project in Eastern Java, Jakarta "Superblock" development, and design of a plasterboard factory for Surabaya.

1988 to 1990: Cooljarloo Management Services, Tiwest Joint Venture

Development Manager

Was the client's senior project manager for a \$350m integrated mineral sands project. During this project became familiar with sand mining and processing technology, the synthetic rutile process and the method of manufacturing titanium dioxide. Established client's project management team responsible for scheduling, cost control, engineering review, accounting and contract administration. Responsibilities also included negotiating all design and construction contracts with the managing contractor, Minproc Engineers; assisting Minproc to develop management systems to meet the needs of a project of this scale; and reporting to joint venture management committees.

1986 to 1988: Sonartec Ltd

Managing Director (1987-1988); General Manager (1986)

Joined this company at a time when high-technology companies were receiving wide attention from investors and government. Achievements included management of a development programme, which in one year converted patents into the first pre-production versions of the company's underwater fishing technology, which was then demonstrated in waters up to 100 fathoms (off WA coast), and 2000 feet in Florida.

1982 to 1986: Santos Ltd

Assistant to the General Manager for South Australian Operations (1986); Manager Engineering and Construction (1984-85); Manager Projects (1983); Project Manager (1982)

- Responsible for Drilling Department (exploration and development drilling), with a programme of over 10 wells per annum
- Significant responsibility in the annual budget cycle for capital development in Cooper Basin
- Managed over \$400m of field projects ranging from pipelines, dehydration units, compressor stations, new camps, roads and airstrips.
- Introduced sound methods of cost and schedule control to the Engineering and Construction Department, raising the standard of engineering documentation, contract administration, and quality control and assurance.

- Reported to Cooper Basin Producers in joint venture meetings, and to South Australian Government on activities in general, on a regular basis.
- Santos's project manager for Port Bonython (then Stony Point), a \$390m oil and LPG fractionation plant being built as part of Cooper Basin Liquids Project. Supervised Davy McKee Pacific in design of plant, including process design in Houston, and worked with Davy in developing contracting strategy, industrial relations policy and contractor evaluation and negotiation. First oil shipped from site only 9 months after construction began.

1976 to 1982: Woodside Offshore Petroleum

Senior Pipelines Engineer (1976-79); Resident Engineer, Modules (1979-82)

- Initial work was fluid mechanics design of 135km 40in via offshore pipeline from North Rankin to shore, and the associated liquids handling facilities at the receiving end. Pipeline was then the largest submarine pipeline designed to operate in significant two-phase flow.
- Was responsible for detailed study which recommended the two-phase flow option (instead of separate liquids and gas lines); this was accepted by the North West Shelf Participants (Shell, BP, Chevron, Woodside and BHP).
- Was responsible (1979-82) for establishing the Jervoise Bay construction site on behalf of Woodside. Managed the tendering process for fabrication and construction of the North Rankin A modules, and took over site management for the utility and production modules at Jervoise Bay.

1973 to 1976: Gibbs & Hill Inc, New York USA

Senior Mechanical Engineer, Nuclear

Gibbs & Hill was the appointed architect/engineer for a 2300MW pressurised water reactor nuclear power station to be built in Texas. Responsibilities included

- Managing the turbine generator purchase contract, fluid systems design in the non-nuclear sections of the plant, safety/probability analyses, design of plant's ultimate heat sink (an artificial lake), specifying bridge and gantry cranes to 450t capacity, piping design, and water hammer analysis in the plant's cooling water system.
- After promotion to Senior Engineer (1974), became one of two team leaders on the project with responsibility for all mechanical plant outside the "nuclear island".

1971 to 1973: UK Atomic Energy Authority

Research Fellow, Reactor Development Division

- Team member on certain research projects related to the UK's water reactor concept, and conducted experiments in two-phase flow and heat transfer, as well as theoretical analyses.
- Joined program for commercialisation of UKAEA's condenser technology, as applied to commercial scale desalination plants. Developed early computer model of flash desalination plant on Guernsey, which was used for troubleshooting (off-design performance simulation). Assisted in commissioning of first commercial falling film - enhanced heat transfer surface - desalination plant in Gibraltar, in 1973.

1968 to 1971: University of Western Australia, Dept. of Mechanical Engineering

- Post-graduate student, completing Ph D in fluid mechanics and heat transfer.

1964 to 1968

- Undergraduate studies in mechanical engineering

Contributions to the Engineering Profession

- Member, Western Australia Division Committee, Engineers Australia (1997-2003)
- President, Western Australia Division, Engineers Australia 2000
- Chair, Mechanical College Board, Engineers Australia 2002-03
- Member, Accreditation Committee, Engineers Australia 2003-06, and participant in, or chair of, several university accreditation visits
- Member, Public Affairs Sub-committee, Western Australia Division, Engineers Australia (2004-06)
- Member, Engineering Heritage Committee of Engineers Australia, Western Australia Division (2017 – present; Chairman 2019)
- Many presentations to Young Engineers and to undergraduate courses at the University of Western Australia and Curtin University
- Presentations on Feasibility Studies to graduate courses at the University of Western Australia.

Other

- Member and Chairman, Planning Committee, St George's College, University of Western Australia (2007-12)
- Chairman of the Board of St George's College, University of Western Australia (2013-2020)
- Former chair, Callaway Foundation, School of Music, University of Western Australia

Publications

- "The Augmentation of Heat Transfer by Radially Aligned Fluid Jets", Ph D Thesis, *UWA* 1972
- President's Address, "Renewable Energy Technologies", Engineers Australia, 2000
- "Feasibility Studies"; Chapter 4 of "The Application of Contracts in Developing Offshore Oil and Gas Projects", Philip Loots and Donald Charrett, *Routledge, Informa Law Series*, 2019

Personal

- Born Darling Point, Sydney, NSW, 22 October 1946
- Awarded secondary school full fee scholarship by Trinity Grammar School, Sydney, 1959-62
- Intermediate Certificate, NSW, 1961
- Christ Church Grammar School, Perth, 1962-63
- Leaving Certificate and General Exhibition, Final Year, WA (1963)
- Awarded full fee scholarship by BP Refinery to study mechanical engineering, 1964 - 68
- Lived at St George's College, UWA, 1984-68; Senior Student in 1968
- Awarded Hackett Fellowship by UWA for post-graduate studies (Ph D)
- Married Diane Patricia Rutter in St George's College Chapel, 20 September 1969
- Son Paul born in Weymouth, England, 27 July 1972
- Son Mark born in Edison, New Jersey, USA, 14 February 1974
- Separated and divorced from Diane 1980 - 81
- Lived with Merelyn Williams 1982 - (never married)
- Played Rugby Union for schools, university and Cottesloe Rugby Club
- Member Royal Perth Golf Club 2000 -
- Enjoyed sailing, squash and cricket (non-competitively)
- Interests include music (mostly classical and jazz), reading, photography (particularly digital), theatre and travel

